

Keller (J. M.)
THE

HOT SPRINGS OF ARKANSAS

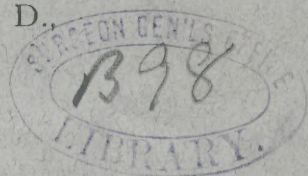
AS A

HEALTH RESORT;

THEIR WATERS AS REMEDIAL AGENTS.

BY

J. M. KELLER, M. D.



[Reprinted from the *St. Louis Medical and Surgical Journal*, August, 1879.]

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EDITOR ST. LOUIS MEDICAL AND SURGICAL JOURNAL :—With the double purpose of complying with an oft-made promise to you, and with a view at once to answer many questions which are daily asked me by the profession of the country, I have hastily and in as condensed form as possible prepared this paper, and submit it for your valuable journal.

The Springs are situated in Garland County, about sixty miles by rail from Little Rock, the capital of the State. They have their source on the west side of what is known as the Hot Springs Mountain, a spur of the Ozark Range. They are confined to, or have their origin in, a space of about six acres of ground, and left to their natural course, would empty into a beau-

tiful creek which dashes along the base of the mountain only a few yards from their heads. Just west of this creek and across a valley of not more than fifty yards, is the mountain known as the Cold Spring Mountain, from the sides of which gush numbers of clear, cold springs, which find their way also into the creek. In addition to these springs flowing from the two mountains, you can scarce go a hundred yards up the various little valleys or gulches without crossing other springs, many of them strongly impregnated with iron; and but a few miles out in one direction there are two or three very large, beautiful chalybeate springs, and still beyond them another and bolder one, widely known as the Mountain Valley Spring, the water from which is very decidedly tonic and diuretic. Its analysis is not known. South of the Hot Springs six miles is what is known as the Sulphur Potash Springs, a very popular resort for invalids after bathing awhile in the hot waters. These, like the other, have never been accurately analyzed; but experience and close observation teach me that their waters are very valuable, and their proximity to the Hot Springs seems a wonderfully wise provision of nature.

Just in the rear of the Hot Springs Mountain is a bold, dashing, clear mountain stream known as the Gulphur, which in the spring affords fine bass fishing as you approach its mouth, where it empties into the Ouachita River, seven miles south of the Springs. The latter abounds with genuine Potomac shad, black bass, salmon, and every variety of perch, affording delightful angling to visitors at almost all seasons of the year, but especially in the fall and spring time.

The general aspect of the country is mountainous, with many small and rich valleys, affording excellent garden spots for the supply of the markets. The forest growth is chiefly pine and oak, though nearly every Southern wood can be found interspersed, and great varieties of evergreens adorn every hill and dale. Especially remarkable is the luxuriant growth of forest trees and evergreens on the Hot Springs Mountain, in the immediate vicinity of the Hot Springs. There the soil is even richer than the valleys, and the foliage has a much deeper and richer verdure, and you could scarce find a more interesting garden for the botanist than the mountain and its surrounding valley affords him. Almost every variety of Southern wild flowers can be found here, the magnolia and jessamine being among the few exceptions.

The climate, for most of the year, is very delightful, being a happy medium between the severe cold of the North and the oppressive heat of the South, and, as a result, no season can be said to be most popular. The topography of the place and its surroundings is such that, whilst its mountains protect it from heavy winds, the valleys so connect with each other as at all times to produce a free current of air. Especially true is it that in summer, as the sun goes down, the wind invariably changes to the north, and during the entire night blows delightfully down the valley, and a blanket is comfortable in rooms with the northern exposure nearly every night in summer.

To say that late in summer the place is free from malaria would be untrue, but it can be truthfully said that no other point in the South or Southwest is more exempt than it is from chills and fevers.

The resident population of the place, including whites and negroes, is about 5,000. Among the former are four or five Protestant and one Roman Catholic Church, and the negroes have three or four Baptist and Methodist Churches.

As to the character and habits of the people, like all other places of the kind, they are mixed and varied. As a class, they are composed chiefly of restored invalids, who, having come here and regained health, have become fixtures. Many are engaged in mercantile traffic of one sort or another, generally on small capital. Some have been prosperous and made money, and do very extensive and lucrative business in various mercantile lines. More numerous than the merchants are the hotel and boarding-house keepers, ranging from first-class hotels to the poorest shanty boarding-house. Among the first are the Arlington, the Avenue, the Grand Central, the Waverly and French's Hotel.

Like all other places where visitors congregate in large numbers, we have here our share of sporting men, who, like the "profession" everywhere else, lose no opportunity to turn a penny if victims offer. They, though, and their ropers are not as dangerous or as much to be dreaded as another and more numerous combination of doctors (?) and their ropers who infest the place and every train which leaves Little Rock coming to the Springs. The gambler only endangers the invalid's purse—the latter class not only rob them of their money, but most likely of health with it. They are a peculiar and *confidential* combination, and a terrible curse to the fair fame of the Springs, and nothing

but the advance of civilization and medical enlightenment will ever serve to check them. The same trouble existed for years at Bath, in England, and was only corrected by the true medical profession of all England joining to put it down. Now that the Government is settling the titles to the lands adjoining and surrounding the Hot Springs Mountain, it will not be long before the present buildings will give way to palatial hotels, and with these changes we earnestly hope to see charlatanry, quackery and empiricism driven out by moral force and professional enlightenment.

For the following tables I am placed under obligations to Mr. Sam'l Hamblin, of the Engineer Corps, now on duty here, whose observations may be relied on as accurate :

	Monthly mean of max. and min. temperature.	Highest temperature.	Lowest temperature.	Inches of rainfall.	Number of rainy days.	
1877		29	15			
July	87.9	100° 31	49° 7	2.10	5	Generally clear, with showers.
August	91.1	102° 15	59° 30	2.76	6	Generall clear, with showers.
September . .	81.1	94° 3	54° 24	2.84	4	Night showers.
October. . . .	70.7	87° 4	37° 31	2.89	5	Clear. with night rains.
November. . .	45	70° 19	26° 2	2.20	2	Clear, with light rains.
December . . .	53	73°	12° 8'	5.79	4	Generally clear, with slow showers.
1878		26	5			
January : . . .	41	69° 19	40° 11	5.22	5	Bright and clear generally, with showers.
February . . .	45	77° 24	18° 1	5.29	7	Cloudy, with light rains.
March	57	85° 7	23° 11	3.89	6	Night showers.
April	65	95° 31	31° 15-16	8.57	10	Night showers.
May	71	97° 27	42° 11	8.46	7	Night showers.
June	77	99° 8	48°	5.48	15	Showers, chiefly with clear sky before and after.

The thermometers used in taking these observations were fixed in a small cage, which stood exposed the entire time. The average diurnal variations of thermometer were from 25° to 30°. The highest reading at 2 P. M., the lowest after midnight.

TABLE OF SPRINGS ON THE HOT MOUNTAIN, SHOWING THE TEMPERATURE OF EACH.

No.	Temp. Fahr.	No.	Temp. Fahr.	No.	Temp. Fahr.	No.	Temp. Fahr.	No.	Temp. Fahr.
1	77	16	101	31	147	46	*Sipage	61	135
2	76	17	*Sipage	32	124	47	144.5	62	109
3	124	18	93	33	140	48	91	63	83
4	124	19	84	34	120	49	131	64	135
5	80	20	83	35	135	50	145	65	141
6	103	21	106	36	110	51	144	66	87
7	115	22	122	37	120	52	143	67	*Sipage
8	121.5	23	125	38	128	53	144.5	68	131
9	122	24	113	39	125.5	54	14	69	83
10	121.5	25	111	40	112	55	122	70	89
11	105	26	106	41	157	56	133	71	94
12	111	27	127.5	42	*Sipage	57	128		
13	135.5	28	145	43	144	58	*Sipage		
14	137	29	90	44	*Sipage	59	133		
15	134	30	134.5	45	111	60	134.5		

*Those marked "Sipage" are intermittent; all others *constant and unvarying in heat and quantity.*

The summit of Hot Springs mountain is 540 feet above the lowest point of what is known as the Government Reservation, four sections of land. It is 440 feet above the general level of the valley opposite to the Springs, and is 1,150 feet above the level of the sea.

What is known as the "Egg Spring," which has the highest temperature (157°), has also the greatest altitude, namely, 776 feet above the level of the sea. The lowest spring in altitude is 694 feet above sea level. The remainder range between these elevations. The lowest point on the reservation is 610 feet above sea level.

The amount of water discharged by these springs is estimated at more than 500,000 gallons every twelve hours, enough to bathe 20,000 persons daily.

Prof. E. H. Larkin, of St. Louis, in 1856, made a quantitative analysis, giving 8½ grains of mineral constituents to the gallon, the water analyzed being of a temperature of 145°. The following was the analysis:

	Grains.		Grains.
Silicic acid.....	27.74	Organic matter.....	8.31
Sesqui oxide of iron.....	1.12	Water.....	1.72
Alumina.....	5.15	Sulphuric acid.....	4.40
Lime.....	28.83	Potash.....	1.46
Magnesia.....	.73	Soda.....	2.01
Chlorine.....	.07	Iodine and bromine.....	a trace
Carbonic acid.....	21.36	Total.....	100.08

8 THE HOT SPRINGS OF ARKANSAS AS A HEALTH RESORT.

In June, 1858, Prof. D. D. Owen, formerly State Geologist, gave the following result of analysis made by boiling down one and a-half gallons of the water:

	Grammes.
Organic matter, combined with some moisture.....	1.16
Silica, with some sulphate of lime not dissolved by water ...	1.40
Bi-carbonate lime.....	2.40
Bi-carb magnesia.....	0.50
Chloride potassium.....	0.04
Chloride sodium.....	0.218
Oxide of iron and a little alumina.....	0.133
Sulphate of lime dissolved by water.....	0.350
Loss iodine? Bromine?.....	0.053
Total.....	6.254

Later, in January, 1859, the same gentleman analyzed the water from what had been ignorantly called the "Arsenic Spring," but found no trace of that mineral in it. I presume if any arsenic was found in it, it reached it by sipage, the ground through which it siped having received it after it had passed through human kidneys.

With these hastily condensed answers to most of the questions, I come now to those which most concern the profession, and which are oftener asked. First, to what is due the heat? What are the diseases which are most benefitted by the use of the waters? and how do they act as curative or remedial agents?

Without being able to demonstrate it positively, I am satisfied, from close observation, that *electricity is the cause*, or at least that it certainly is very highly charged with electricity, as is evidenced by the very decided electric sensation produced upon any one who takes the baths. This, however, is a question yet to be determined by scientific investigation. My answer is only an opinion based upon watching the effects of the water, and upon a few simple experiments, which make me know certainly that it is heavily charged with electric force.

To adopt the sweeping, wholesale list of diseases published by many candidates for practice here as curable by the hot waters, would do great violence to truth, and, as has already been done, great injury to the Springs. To believe the "circulars" and other advertisements scattered over the country broadcast by some of the resident and itinerant doctors who come and go from here with almost each change of the moon, would be to be-

lieve that the "Fabled Box" would have again to be opened, to find an ill incurable by the springs.

For years, scarce any other class of disease came here besides syphilitic and rheumatic cases, and a visit to the place was secretly made by those who came. So much afraid were they of having it known that it was, in many cases the visitors had their letters either addressed anonymously or mailed to some neighboring post-office. All this delicacy of feeling and fear of being thought the victim of specific trouble have passed, and now it is fair to say that not more than two-fifths of cases among men are syphilitic, and not more than one in twenty among the female invalids.

It is true that syphilitic troubles are relieved here more rapidly and certainly than anywhere else that I know of. Experience in the treatment of this disease in private practice, and in hospitals for twenty-five years, and an intimate acquaintance with the Springs for twenty years, force this assertion. If asked does the water of itself cure syphilis, I answer positively, no. If asked, how it acts to effect more rapid and certain cures, the answer is simply that by its powerful eliminative and diaphoretic power, the patient is enabled to take, if necessary, tenfold more mercury and potash than he could possibly take without its aid; more than he could with the help of any artificially heated bath I have ever experimented with. Of the naturally heated water, patients can drink *ad libitum*, never *ad nauseum*, for it has never been known to produce nausea with any one. A bath at a temperature of 98° Fahr., with copious draughts of the water, will produce more profuse diaphoresis than the artificially heated bath will at 110°.

The daily assertions, and many circular statements that syphilis, under any plan of treatment here, can be cured in four or six weeks, are all false, and have done much to ruin the reputation which the Springs actually deserve. It is useless for any one to come here under any such assurances, expecting to be cured. They will surely be disappointed. They may, and generally do find all outward or visible manifestations gone after six weeks active medication and bathing, and may be persuaded that the disease has been eradicated, never to return; but the delusion seldom lasts very long, if they end their visit after that length of time. As a rule, if the desire is to effect a permanent cure, it is useless for syphilitics to come here unless they come deter-

mined to stay at least ten weeks. Then, if they have been properly treated, I am satisfied they can go home with a pretty strong assurance of the disease having been cured. It must be borne in mind that what I have said applies only to those who have no heart or lung involvement which would prevent the free use of the bath.

By far the largest class of patients who come here are rheumatics, and it is only those of the chronic forms that are benefited. Acute inflammatory rheumatism is always made worse, and should never come to the Springs to be treated. Rheumatism from syphilis as a cause, invariably is rapidly relieved. Gonorrhœal rheumatism is much more intractable. It is not an unusual thing to see rheumatics who are required to be carried to the baths at first, walking nimbly in a week or two. Far from true is this, though, of most cases, for they require most generally very careful and long attention.

The same speedy cures are often made in neuralgic cases, the baths seeming to act magically. Other cases, though, are more unyielding and require every care and attention.

Scrofulous diathesis, when there is physical force enough left to stand the baths, is generally greatly benefited, if not entirely cured.

Chronic uterine troubles, as a class, yield to treatment more readily with proper local and general bathing in the hot waters, than I have found them to do elsewhere. Specially are the climacteric ills in women corrected or greatly alleviated.

Diseases of the bladder, urethral track and kidneys, incipient spinal troubles, many of the diseases of the skin, alcoholism and nicotinism are among the diseases which experience teaches can be better treated here than I have ever been able to treat them elsewhere. It is a curious fact that the hot water don't mix well with whisky or brandy in the stomach, and as a result, when a fondness for it is contracted, the desire for alcoholic drink ceases.

But while it is true that the diseases I have mentioned are really more tractable when the usual plans of treatment are aided by the internal and external use of the hot waters, still, so little as yet is known of the scientific use of mineral and thermal waters and balneotherapy, and so much humbugging and empiricism practiced with their use or abuse, that it is not strange that the profession generally have but little confidence in any

good results to patients sent to such places, and that they go so far in most cases as to urgently advise against their patients even giving them a trial.

This opposition will continue until many of the evils alluded to are corrected, and until defective chemical analysis gives way to accurate and scientific investigation, which will enlighten us fully and satisfactorily in the theory of hydrology and balneology. The qualitative and quantitative analysis of mineral waters were not given until within the past half century, when Burzeline and Struve bent their energies and labors to the work, and during that short time more light has been thrown upon it than all preceding centuries ever gave, and although the advance has not been very great, we may safely say that a foundation has been laid for a complete and perfect understanding of balneotherapy. Like the springs of Bath, the Hot Springs of Arkansas should be classed as "Indifferent Thermal Springs," because their peculiar heat is their chief dynamic power, although this power may be modified or supplemented by gases and the small amount of saline materials contained. The warm or hot baths increase the heat of the body, partly by direct supply and partly by diminished radiation and evaporation—as cold produces more or less congestion of the internal organs, so, on the contrary, moist heat draws the blood from them to the external parts. Cold refreshes by stimulating the functions. Heat by physically facilitating them, and in this is the great and important difference between the cold water system and the thermal method of treating disease. It has been said that the warm or hot bath, during its administration and so long as its primary effects continue, favors, by means of the physically increased degree of heat, the normal physical and chemical condition of the cells, fluids, and organic tissues, thus stimulating the organic functions and increasing the change of substance without demanding strong reaction, but merely facilitating the physical conditions of life; whilst it lessens the loss of heat it undertakes the normal compensating reaction, and whilst it surrounds the skin with an equable temperate medium, it frees the loss of heat from all variations of time and place, and produces a quieting effect. The circulation in the skin and parts accessible to heat is accelerated just as by the cold bath, though the mechanical process is different. It is true that greater degrees of heat produce a stimulating effect upon the heart and brain, but this effect is gentle and

not accompanied by shock, and, moreover, the congestion in the peripheric parts draws away the blood from the central organs of the circulation and nervous system. In addition to all this, the well known property of warm water of softening the skin and of purifying it rapidly by exciting perspiration, of promoting absorbtion by stimulating the nervous center, and by increasing the circulation and pressure of the blood, thus distending the vessels, all go to add to the importance of it as a therapeutic agent.

But I am reminded that I have already made my paper longer than I intended, and whilst there is much more that I would like to say on the therapeutical action of the Hot Springs, I must close, not without hoping that I have answered some of the inquiries so often made of the place, as satisfactorily as possible until thorough scientific analysis and investigation can be had by scientists yet to be appointed by the government.

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